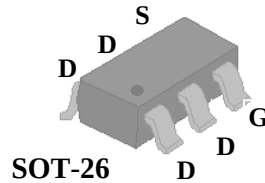


N-CHANNEL ENHANCEMENT MODE POWER MOSFET

PRODUCT SUMMARY

Capable of 2.5V gate drive
Lower on-resistance
Surface mount package
RoHS Compliant

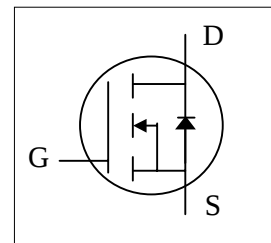


BV_{DSS}	20V
$R_{DS(ON)}$	34m Ω
I_D	6.3A

DESCRIPTION

Advanced Power MOSFETs utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The SOT-26 package is universally used for all commercial-industrial applications.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ³ , $V_{GS} @ 4.5\text{V}$	6.3	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current ³ , $V_{GS} @ 4.5\text{V}$	5	A
I_{DM}	Pulsed Drain Current ^{1,2}	30	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation	2	W
	Linear Derating Factor	0.016	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

THERMAL DATA

Symbol	Parameter	Value	Unit
R_{thj-a}	Thermal Resistance Junction-ambient ³ Max.	62.5	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS

($T_J=25^{\circ}\text{C}$ unless otherwise specified)

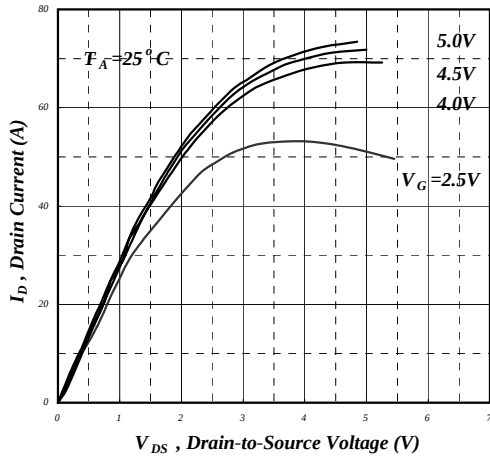
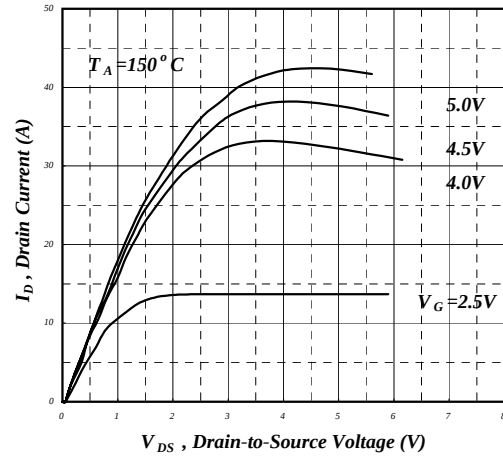
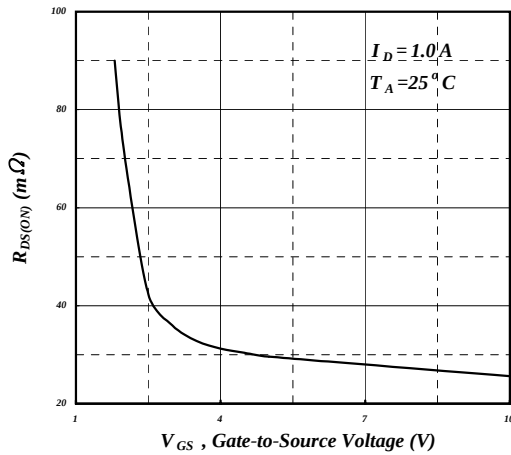
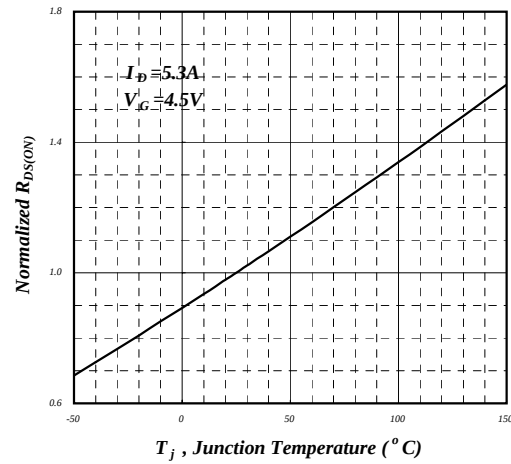
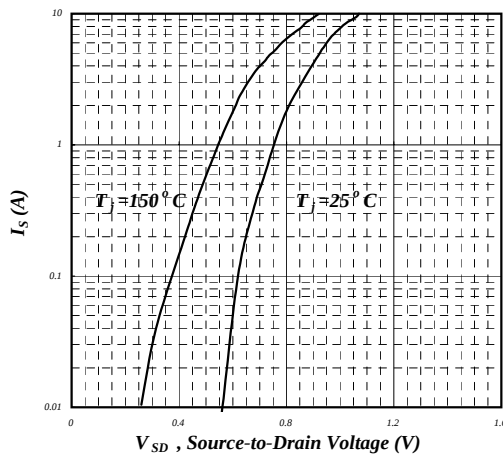
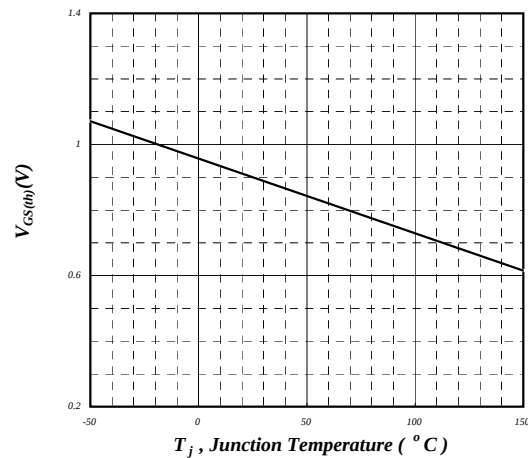
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
$\Delta BV_{DSS} / \Delta T_J$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_D=1mA$	-	0.1	-	$V/^{\circ}\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=5.5A$	-	-	30	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=4.5V, I_D=5.3A$	-	-	34	$m\Omega$
		$V_{GS}=2.5V, I_D=2.6A$	-	-	50	$m\Omega$
		$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	-	-	V
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=5.3A$	-	13	-	S
I_{DSS}	Drain-Source Leakage Current ($T_J=25^{\circ}\text{C}$)	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
	Drain-Source Leakage Current ($T_J=55^{\circ}\text{C}$)	$V_{DS}=16V, V_{GS}=0V$	-	-	10	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}= \pm 12V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=5.3A$	-	8.7	16	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=10V$	-	1.5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	3.6	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=15V$	-	6	-	ns
t_r	Rise Time	$I_D=1A$	-	14	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=2\Omega, V_{GS}=10V$	-	18.4	-	ns
t_f	Fall Time	$R_D=15\Omega$	-	2.8	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	603	1085	pF
C_{oss}	Output Capacitance	$V_{DS}=15V$	-	144	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	-	111	-	pF

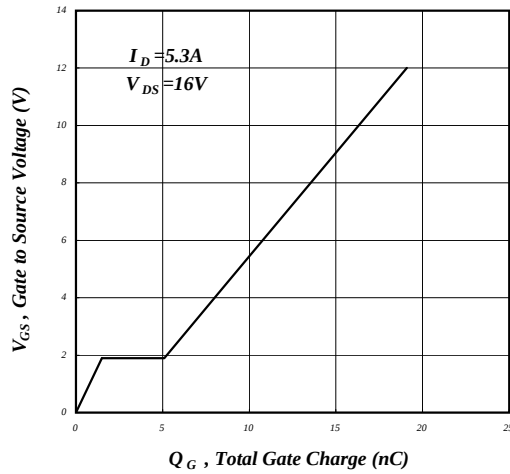
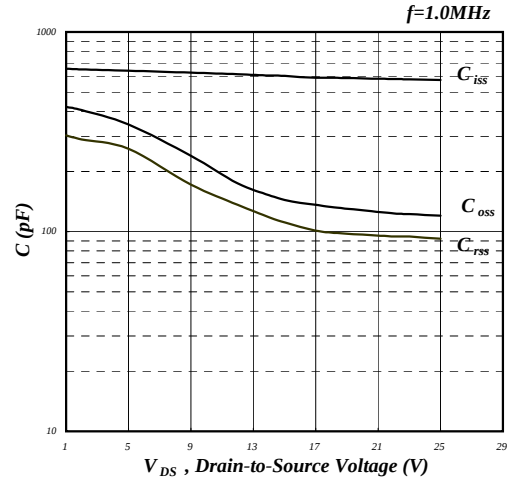
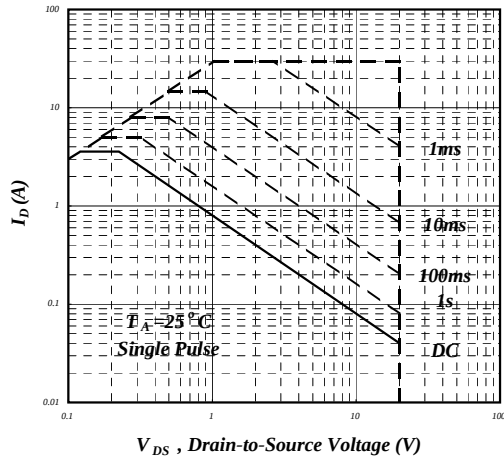
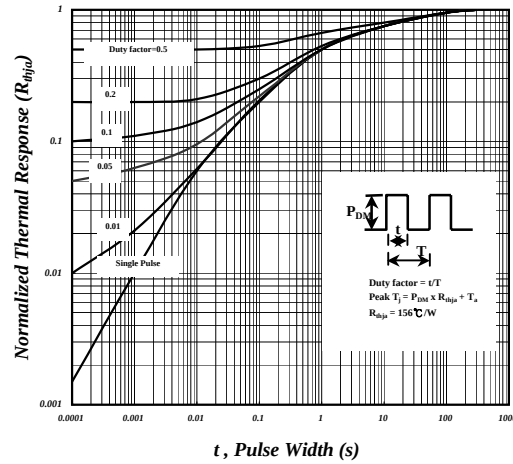
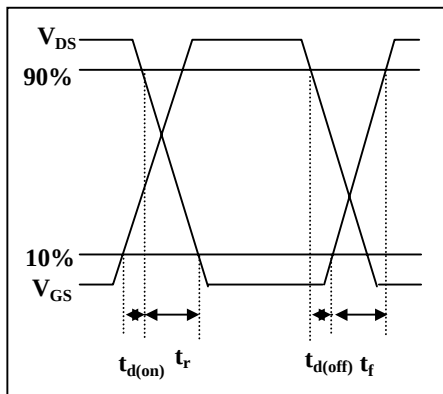
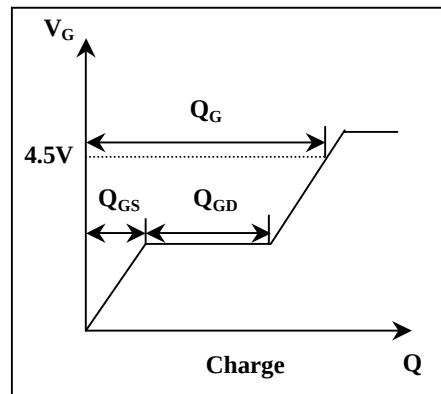
SOURCE-DRAIN DIODE

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=1.2A, V_{GS}=0V$	-	-	1.2	V
t_{rr}	Reverse Recovery Time ²	$I_S=5A, V_{GS}=0V,$	-	16.8	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	11	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in² copper pad of FR4 board ; $156^{\circ}\text{C}/W$ when mounted on min. copper pad.


Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics

Fig 3. On-Resistance v.s. Gate Voltage

Fig 4. Normalized On-Resistance v.s. Junction Temperature

Fig 5. Forward Characteristic of Reverse Diode

Fig 6. Gate Threshold Voltage v.s. Junction Temperature


Fig 7. Gate Charge Characteristics

Fig 8. Typical Capacitance Characteristics

Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform

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